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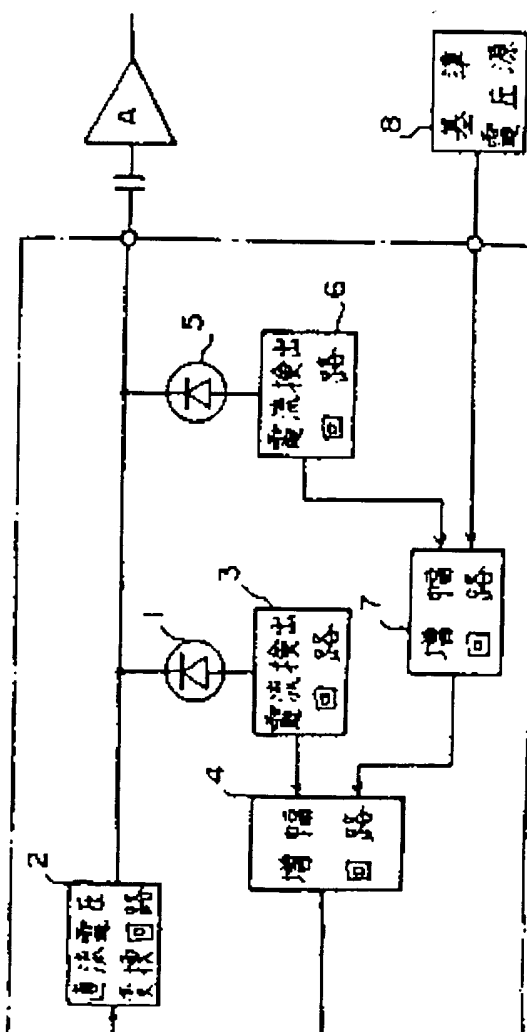
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### (54) TEMPERATURE COMPENSATION CIRCUIT OF BIAS CIRCUIT FOR AVALANCHE PHOTODIODE

(57) Abstract:

**PURPOSE:** To stabilize an electric current flowing to an avalanche photodiode against a change in an ambient temperature by executing a control operation in such a way that a total electric current flowing to a germanium avalanche photodiode is increased by a changed amount in a dark current.

**CONSTITUTION:** When an ambient temperature of avalanche photodiodes 1 and 5 is raised and a dark current flowing to the avalanche photodiode 1 is increased, a signal current component is decreased by an increased amount of the dark current if a potential to be impressed on the other input terminal of an amplification circuit 4 is definite. Also a dark current flowing to the avalanche photodiode 5 is increased by a rise in temperature; its value is nearly equal to a magnitude of the dark current flowing to the diode 1. The dark current flowing to the diode 5 is converted into a voltage



proportional to a current value by means of a current detection circuit 6, a voltage at the other input terminal of the amplification circuit 4 is increased by an increased amount of the dark current of the diode 5 by means of an amplification circuit 7. Thereby, a more electric current by the increased amount of the dark current can flow to the diode 1. That is to say, an electric current of an optical signal component can be made definite irrespective of a change in the ambient temperature.

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